Amendments to the Claims

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1-44. (Previously canceled)

~~63~~ 621 ~~45~~. (Currently Amended) A system for providing perspective corrected views of a selected portion of a received optical image captured using a wide angle lens, the received optical image being distorted, the system comprising:

image capture means for receiving signals corresponding to said received optical image and for digitising said signal;

input image memory means for receiving said digitised signal;

D' cont'd

input means for selecting a non-predetermined portion of said received image to view;

image transform processor means for processing said digitised signals to produce an output signal corresponding to a perspective corrected image of said selected portion of said received image;

output image memory means for receiving said output signal from said image transform processor means; and

output means connected to said output image memory means for recording or displaying said perspective corrected image of said selected portion;

characterised in that said image transform processor means comprises transform parameter calculation means for calculating transform parameters in response to the selection of ~~for~~ said selected portion of said image and processes said digitised signal based on said calculated transform parameters to generate said output signal.

~~63~~ 2 ~~46~~. (Previously Presented) A system according to claim ~~45~~ 621, comprising a camera imaging system for receiving said optical image and for producing said signals corresponding to said received optical image for output to said image capture means.

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64 3
47. (Previously Presented) A system according to claim 46 62 2, comprising wide angle lens means mounted on said camera imaging system for producing said optical image for optical conveyance to said camera imaging system.

65 4
48. (Previously Presented) A system according to claim 47 64 3, wherein said lens means is one or more fish-eye lenses.

66 5
49. (Previously Presented) A system according to claim 45 62 1, wherein said input means provides for input to said image transform processor means of one or more of: a direction of view; tilting of a viewing angle; rotation of a viewing angle; pan of said viewing angle; focus of said image and magnification of the selected portion of the image.

D 11 contd

67 6
50. (Previously Presented) A system according to claim 49 66 5, wherein tilting of said viewing angle through at least 180 degrees is provided for.

68 7
51. (Previously Presented) A system according to claim 49 65 4, wherein rotation of said viewing angle through 360 degrees is provided for.

69 8
52. (Previously Presented) A system according to any one of claims 49 66 5, wherein pan of said viewing angle through at least 180 degrees is provided for.

70 9
53. (Previously Presented) A system according to claim 52 69 8, wherein pan of said viewing angle through 360 degrees is provided for.

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54. (Previously Presented) A system according to claim 45, wherein said input means is a user-operated manipulator switch means.

55. (Previously Presented) A system according to any one of claims 45, wherein said input means is a signal from a computer input means.

56. (Previously Presented) A system according to claim 45, wherein said image transform processing means is programmed to implement the following two equations:

$$x = \frac{R\{uA - vB + mR\sin\beta\sin\delta\}}{\sqrt{u^2+v^2+m^2R^2}}$$

$$y = \frac{R\{uC - vD + mR\sin\beta\sin\delta\}}{\sqrt{u^2+v^2+m^2R^2}}$$

where:

$$A = (\cos\phi\cos\delta - \sin\phi\sin\delta\cos\beta)$$

$$B = (\sin\phi\cos\delta + \cos\phi\sin\delta\cos\beta)$$

$$C = (\cos\phi\sin\delta + \sin\phi\cos\delta\cos\beta)$$

$$D = (\sin\phi\sin\delta + \cos\phi\cos\delta\cos\beta)$$

and where:

R = radius of the image circle
β = zenith angle
δ = Azimuth angle in image plane
ϕ = Object plane rotation angle
m = Magnification
u,v = object plane coordinates
x,y = image plane coordinates

~~74~~ 13
~~57~~. (Currently Amended) A method for providing perspective corrected views of a selected portion of an optical image captured with a wide angle lens, the received optical image being distorted, the method comprising:

providing a digitised signal corresponding to said optical image;

selecting a non-predetermined portion of said optical image;

transforming said digitised signal to produce an output signal corresponding to a perspective corrected image of said selected portion of said received image; and

displaying or recording said perspective corrected image of said selected portion;

characterised in that said step of transforming said digitised signal comprises calculating transform parameters in response to the selection of ~~for~~ said selected portion of said image, said calculated transform parameters being used to control said transformation of the digitised signal to generate said output signal.

D 11 cont'd

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~~75~~
~~58~~. (Previously Presented) A method according to claim ~~74~~ 13 ~~57~~, comprising first receiving said optical image, producing signals corresponding to said received optical image and digitizing said signals.

~~76~~ 15
~~59~~. (Previously Presented) A method according to claim ~~74~~ 13 ~~57~~, comprising capturing said optical image with one or more fish-eye lenses.

~~77~~ 16
~~60~~. (Previously Presented) A method according to any one of claims ~~74~~ 13 ~~57~~, wherein said step of selecting the portion of the image to view comprises selecting one or more of: a direction of view; tilting of a viewing angle; rotation of a viewing angle; pan of said viewing angle; focus of said image and magnification of the selected portion of the image.

~~78~~ 17
~~61~~. (Previously Presented) A method according to claim ~~77~~ 16 ~~60~~, wherein tilting of said viewing angle through at least 180 degrees is provided for.

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~~79~~ 18
~~62~~. (Previously Presented) A method according to claim ~~60~~ 16, wherein rotation of said viewing angle through 360 degrees is provided for.

~~80~~ 19
~~63~~. (Previously Presented) A method according to any one of claims ~~60~~ 16, wherein pan of said viewing angle through at least 180 degrees is provided for.

~~81~~ 20
~~64~~. (Previously Presented) A method according to claim ~~63~~ 19, wherein pan of said viewing angle through 360 degrees is provided for.

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~~82~~ 21
~~65~~. (Previously Presented) A method according to any one of claims ~~57~~ 94 13, wherein selection of said portion of the image to view is achieved using a user-operated manipulator switch means.

~~83~~ 22
~~66~~. (Previously Presented) A method according to any one of claims ~~57~~ 94 13, wherein selection of said portion of the image to view is controlled by a signal from a computer input means.

~~84~~ 23
~~67~~. (Previously Presented) A method according to any one of claims ~~57~~ 94 13, wherein said image transformation implements the following two equations:

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$$x = \frac{R\{uA-vB+mR\sin\beta\sin\delta\}}{\sqrt{u^2+v^2+m^2R^2}}$$

$$y = \frac{R\{uC-vD+mR\sin\beta\sin\delta\}}{\sqrt{u^2+v^2+m^2R^2}}$$

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where:

$$A = (\cos\phi\cos\delta - \sin\phi\sin\delta\cos\beta)$$

$$B = (\sin\phi\cos\delta + \cos\phi\sin\delta\cos\beta)$$

$$C = (\cos\phi\sin\delta + \sin\phi\cos\delta\cos\beta)$$

$$D = (\sin\phi\sin\delta + \cos\phi\cos\delta\cos\beta)$$

and where:

R = radius of the image circle
β = zenith angle
δ = Azimuth angle in image plane
ϕ = Object plane rotation angle
m = Magnification
u,v = object plane coordinates
x,y = image plane coordinates

D' cont'd

~~85~~ 24
~~68~~. (Previously Presented) A method according to any one of claims ~~57~~ 94 13, wherein a plurality of portions of said image are selected for viewing and are displayed either simultaneously or consecutively.

~~86~~ 25
~~69~~. (Previously Presented) A method according to any one of claims ~~57~~ 94 13, wherein the image is viewed interactively by repeating the steps of selecting, transforming and displaying said portion of the image.

~~89~~ 26
~~70~~. (Previously Presented) A method according to claim ~~57~~ 94 13, wherein said step of transforming the image is based on lens characteristics of the wide angle lens.

~~88~~ 27
~~71~~. (Previously Presented) A method according to claim ~~70~~ 87 26, wherein the step of transformation is based on azimuth angle invariability and equidistant projection.

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12. (Previously Presented) A method according to claim 13, wherein the step of transforming the image is performed at real time video rates.

13. (Previously Presented) A method for providing perspective corrected views of a selected portion of a spherical image comprising two images captured with a fisheye lens, the received spherical image being distorted, the method comprising:

providing a digitised signal corresponding to said spherical image;

selecting a portion of said spherical image;

transforming said digitised signal to produce an output signal corresponding to a perspective corrected image of said selected portion of said spherical image; and

displaying or recording said perspective corrected image of said selected portion;

characterised in that said step of transforming said digitised signal comprises calculating transform parameters for said selected portion of said image, said calculated transform parameters being used to control said transformation of the digitised signal to generate said output signal.